

Remarks

The present invention relates to methods for reducing the energy consumption of a building by coating one or more external vertical walls of the building with a heat reflective wall paint which has at least one heat reflective metal oxide pigment comprised of a solid solution having a corundum-hematite crystal lattice structure.

By the present communication, Claims 1-2 have been amended to incorporate the prior language of Claim 4 and thereby define Applicant's invention with greater particularity. Claim 4 has been cancelled. Additionally, Claim 1 has been amended to further specify conditions for the surface temperature comparison of Claim 1, support for which is found in the specification at, for example, Example 3, paragraphs [0066]-[0070]. Claim 17 has been amended to depend from Claim 1. Furthermore, the language of Claims 20-23 has been amended to be consistent with Claim 1, upon which Claims 20-23 depend.

By the present communication new Claim 36 is added to provide that pigmentation of the heat reflective wall paint of Claim 1 consist essentially of at least one heat reflective metal oxide pigment, support for which is found at, for example, paragraph [0030]. New Claim 37, dependent upon Claim 36, provides that the color of the heat reflective wall paint is provided by a plurality of colored pigments according to Claim 36, support for which is found at, for example, paragraph [0030]. It is respectfully submitted that new Claims 36-37 do not require additional search by the Examiner, as the subject matter thereof, of necessity, would have been embraced within the current search.

No new matter is introduced as the subject matter is fully supported by the specification and claims as originally filed. Entry of the amendments submitted herewith is respectfully requested.

Claims 1-3, 5-23, and 30-37 are pending and under active prosecution. The **Listing of Claims** with appropriate status identifier begins on page 2 of this communication.

Rejections under 35 U.S.C. §112

The rejection of Claims 1, 3-23, and 30-35 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite is respectfully traversed. The Examiner alleges claims 1, 3-23, and 30-35 are indefinite because it is allegedly not clear what the surface temperature of the resultant coated wall is lowered in comparison to. The claims as amended recite “the surface temperature of the resultant coated wall is lowered relative to the surface temperature of a similarly situated wall coated with a non-reflective wall paint of the same color.” Therefore, it is respectfully submitted that the rejection is moot.

The Examiner alleges (Office Action mailed February 7, 2006, page 3, item 6) that the term “dark” is a relative term which renders the claim indefinite. The Examiner’s attention is drawn to paragraph [0029] wherein the term “dark” is expressly defined:

... Preferably, the present wall paints are of a dark color (i.e. of a shade tending toward black in comparison with other shades), such as black, blue, green, yellow, red, or any combination thereof. (emphasis added)

Because the term “dark” must be read in view of the specification (*Markman*, 52 F.3d at 979), this term means “of a shade tending toward black in comparison to other shades.” Furthermore, those of skill in the art of painting would immediately understand the concept and boundaries of the term “dark” to mean the result of adding black to a shade, support for which is further provided in the dictionary definitions of the terms “dark” and “shade,” viz:

dark ... **1 a** devoid or partially devoid of light: not receiving, reflecting, transmitting, or radiating light **b**: transmitting only a portion of light **2 a**: wholly or partially black **b of a color**: of low or very low lightness ...

and

shade ... **8 a**: a color produced by a pigment or dye mixture having some black in it ...

(Webster’s Ninth New Collegiate Dictionary, 1991, Merriam-Webster, Inc. Springfield, MA).
Additionally, Applicant respectfully requests consideration of the attached declaration of Mark

A. Gierke (i.e., the Gierke Declaration) under 37 C.F.R. § 1.132 (attached hereto as Exhibit 1). Paragraph 5 of the Gierke Declaration provides additional support regarding the term “dark” as used by one of skill in the art of painting, which definition is fully in accordance with the definition provided immediately above. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the present rejection under 35 U.S.C. § 112, second paragraph.

Rejections under 35 U.S.C. §102(b)

The rejections under 35 U.S.C. §102(b) of Claims 1-3, 6-17, 20-23, 30 and 34 as allegedly being anticipated by Krauthauser (US 5,962,143), and of Claims 1-3, 5-17, and 20-23 as allegedly being anticipated by Yanagimoto (US 6,521,038) are respectfully traversed.

Neither of the current rejections over Krauthauser and Yanagimoto were made with respect to Claim 4. Accordingly, by the present communication, where the subject matter of Claim 4 has been incorporated into Claims 1 and 2, the current rejections under 35 U.S.C. §102(b) are rendered moot. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejections of Claims 1-3, 5-17, 20-23, 30 and 34 under 35 U.S.C. §102(b).

Rejections under 35 U.S.C. §103(a)

To establish a *prima facie* case of obviousness, three criteria must be met: there must be some motivation or suggestion, either in the cited publications or in knowledge available to one skilled in the art, to modify or combine the cited publications; there must be a reasonable expectation of success in combining the publications to achieve the claimed invention; and the publications must teach or suggest all of the claim limitations. See MPEP §2142. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 493; 20

USPQ2d 1438, 1442 (Fed. Cir. 1991); see also MPEP §2142. In analyzing obviousness, the Court of Appeals for the Federal Circuit has repeatedly cautioned that:

[t]he factual inquiry... must be based upon objective evidence of record.... [T]he best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.... [P]articular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.

In re Sang-Su Lee, 277 F.3d 1338, 1343 (Fed. Cir. 2002), 61 USPQ2d 1430, 1433 (internal citations omitted).

Rejections under 35 U.S.C. §103(a): Claims 18-19 and Claims 31-35.

The rejections under 35 U.S.C. §103(a) of Claims 18-19 as allegedly being unpatentable over Krauthauser in view of Tsuda (US 6,359,030) or Slama (US 5,883,180), of Claims 31-32 over Krauthauser in view of Abe (US 4,546,007) or Gilli (US 6,676,742), of Claim 33 over Krauthauser in view of Shelley (US 2004/0099807), of Claim 35 over Krauthauser in view of Beckenhauer (US 6,110,270), of Claims 34-35 over Krauthauser in view of SUPER COTE TEXTURED PRIMER technical data sheet (11/2003), and of Claims 18-19 over Yanagimoto in view Tsuda or Slama, are respectfully traversed.

Instant claims 18-19 and Claims 31-35 depend from Claim 1 which recites a heat reflective wall paint that that comprises at least one heat reflective metal oxide pigment comprising a solid solution having a corundum-hematite crystal lattice structure. None of the Krauthauser, Yanagimoto, Tsuda, Slama, Abe, Gilli, Shelley, Beckenhauer or SUPER COTE TEXTURED PRIMER technical data sheet (11/2003) references teach or suggest at least one heat reflective metal oxide pigment comprising a solid solution having a corundum-hematite crystal lattice structure; therefore the references fail to teach or suggest a method of reducing energy consumption by coating at external vertical wall of a building with paint having such a pigment. Accordingly, the references, both alone and in combination, fail to meet all the

limitations of the instant claims and therefore a *prima facie* case of obviousness fails.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 18-19 and 31-35 under 35 U.S.C. §103(a).

Rejection of Claims 1-17 and 20-23 under 35 U.S.C. §103(a) over Sliwinski (US 6,454,848) in view of “There Goes the Sun” (PWC, Jan-Feb 2004).

The rejection of Claims 1-17 and 20-23 under 35 U.S.C. §103(a) as allegedly being unpatentable over Sliwinski (US 6,454,848) in view of “There Goes the Sun” (PWC, Jan-Feb 2004) is respectfully traversed.

Applicant submits that “There Goes the Sun” is not available as prior art under 35 U.S.C. §103(a) as the publication date thereof (i.e., Jan-Feb, 2004) was after the date of the present invention. See MPEP § 2141.01. In order to provide support for the date of the invention, Applicant respectfully requests consideration of the attached declaration (Exhibit 2) of the inventor, Jay A. Haines, under 37 C.F.R. § 1.131 (the “Haines Declaration”). The Haines Declaration provides evidentiary support in the form of five Exhibits that the presently claimed invention was made prior to January 2004. Specifically, the Haines Declaration provides support that computer simulations of the method of the present invention were conducted, a building was painted according to the invention, paints of the invention were tested, materials to manufacture the paints of the invention were purchased, and the paints were actually manufactured prior to January 2004. Accordingly, “There Goes the Sun” cannot be prior art under 35 U.S.C. §103(a), and Applicant requests reconsideration and withdrawal of all rejections under 35 U.S.C. §103(a) which rely on “There Goes the Sun.”

Rejection of Claims 1-17 and 20-23 under 35 U.S.C. §103(a) over Sliwinski in view of Krauthauser

The rejection of Claims 1-17 and 20-23 under 35 U.S.C. §103(a) as allegedly being unpatentable over Sliwinski in view of Krauthauser is respectfully traversed.

The instant invention is based on the novel concept that coating one or more external vertical walls of a building with a paint that has a heat reflective metal oxide pigment comprising a solid solution having a corundum-hematite crystal lattice structure can reduce energy consumption required to cool the interior of the building. The Sliwinski reference cited by the Examiner discloses pigments with a corundum-hematite crystal lattice structure, however, as the Examiner acknowledges, Sliwinski does not teach applying/coating paint with such pigments onto the external vertical wall(s) of a building (Office Action mailed February 7, 2006, page 13, paragraph 26, lines 11-12). In an attempt to meet this missing claim element, the Examiner cites a passage from the Krauthauser reference which discloses coating plastic “façade elements” and alleges that it would be obvious to combine the references to arrive at the presently claimed invention.

From the outset, Applicant respectfully submits that the “façade elements” described in the Krauthauser patent are not the same as an external wall as the Examiner appears to infer. In this regard the Krauthauser patent describes plastic façade elements that can become damaged by heat (i.e. “damage such as cracks, reduction in gloss and colour fading”). Column 1, lines 17-20. Applicant respectfully submits that one of ordinary skill would understand that such plastic “façade elements” do not refer to an external wall of a building as the Examiner asserts, but instead refer to elements made of plastic that may be present on an external wall such as decorative features (i.e. moldings, pillars, and the like), lighting elements, or mailboxes. Thus, Applicant respectfully submits that a “façade element” is not analogous with an external wall of a building, and therefore the Sliwinski and Krauthauser references alone and in combination fail to disclose the claim element of the instant claims which recites coating one or more external walls of a building with a heat reflective wall paint that comprises at least one heat reflective metal

oxide pigment comprising a solid solution having a corundum-hematite crystal lattice structure. However, even if a “façade element” is analogous to an external wall, the Examiner still fails to establish a *prima facie* case of obviousness because the Examiner has failed to point to any teaching or suggestion provided in the references that would motivate one of ordinary skill to combine the references, nor has the Examiner provided any showing that one of ordinary skill would have any reasonable expectation that combining the references would successfully achieve the claimed invention.

Motivation to Combine. The Examiner asserts that it would be obvious to combine the references, however, the Examiner has failed to point to any specific teachings in either Sliwinski or Krauthauser that would motivate one of skill in the art to combine the pigments of Sliwinski with the coating of “façade elements” of Krauthauser to arrive at the present invention directed to reducing energy consumption in a building by painting at least one external vertical wall with a heat reflective wall paint comprising a heat reflective metal oxide pigment comprising a solid solution having a corundum-hematite crystal lattice structure. Thus, at best the rejection is a classic case of impermissible hindsight where the Examiner has broken the references into minor elements and put them back together using only the teachings of the instant application as a guide to arrive at the instantly claimed invention.

In this regard, the instant claims are directed to reducing energy consumption associated with cooling the interior of a building by coating the external walls with the paint specified in the claims. In contrast, the Krauthauser reference teaches to reduce heat generation on “façade elements” in order to reduce damage such as cracks, reduction in gloss and colour fading. Nowhere does the reference provide any teaching or suggestion to coat the “façade elements” present on a building in order to reduce the energy consumption. Thus, because the purpose of coating the façade elements stated in Krauthauser is entirely different than the purpose of the painting walls recited in the instant claims (i.e. reducing energy costs associated with cooling the interior of a building), one would have no motivation to modify Krauthauser to arrive at the claimed invention.

Moreover, the pigments disclosed in Sliwinski operate by entirely different principles than the composite coatings disclosed in Krauthauser; therefore, one of ordinary skill would be motivated against combining the references. Specifically, Sliwinski provides infrared reflective inorganic color pigments having the corundum-hematite crystalline structure. See Sliwinski, Col. 1, ll. 10-16. As described in the Gierke Declaration at paragraph 15, the colored pigments of Krauthauser are selected such that they transmit infrared radiation (Krauthauser, Col. 2, lines 55-60). Thus, the infrared reflecting property of the Krauthauser composite coatings is due to the silicic acid component (Krauthauser, Col. 4, lines 28-34) that must be added to the composite coatings in addition to the colored pigments. See Gierke Declaration, paragraph 15. Thus, Krauthauser does not provide any teaching to provide a paint comprising a colored pigment that itself reflects infrared radiation, and, in particular, a heat reflective wall paint comprising at least one heat reflective metal oxide pigment comprising a solid solution having a corundum-hematite crystal lattice structure. Therefore, Applicant respectfully submits that there would be no motivation by one of ordinary skill in the art to combine Sliwinski with Krauthauser because the paint compositions thereof operate by different principles. See Gierke Declaration, paragraph 16.

Expectation of Success. The instant invention is based on the novel concept that coating one or more external walls of a building with a heat reflective wall paint comprising at least one heat reflective metal oxide pigment comprising a solid solution having a corundum-hematite crystal lattice structure can reduce energy consumption required to cool the interior of the building. The application provides a detailed description of how to prepare suitable paints for the inventive method, how to apply the paints to the exterior of a building, and analyses which demonstrate the effectiveness of Applicant's invention. The Examiner has failed to make any showing that prior to the Applicants' invention there would be any reasonable expectation that simply coating the exterior walls of a building with a heat reflective wall paint comprising at least one heat reflective metal oxide pigment comprising a solid solution having a corundum-hematite crystal lattice structure could successfully reduce energy consumption associated with cooling the interior of the building. In particular, there is no enabling teaching in either the Sliwinski or Krauthauser references that would give an ordinary skilled artisan any reasonable

expectation that merely painting external walls of a building with paint having the claimed pigments could reduce energy costs as compared to a building with a building painted in the same color lacking the claimed pigments.

In this regard, Applicant provides herewith further evidence that the methods of the instant invention (i.e., painting external walls with the claimed paint) indeed offer substantial savings in total energy costs. The Haines Declaration (at Exhibit 1 thereof) provides computer simulation results from consultant Eley Associates comparing a 45' x 45' single family, single story, detached home in Los Angeles or Miami, coated with either the paint of the invention, or a paint of the same color lacking the heat-reflective metal oxide pigment of the invention. The annual savings in Los Angeles was computed to be 24% for the method of the present invention. It is submitted that these energy savings calculations demonstrate evidence of unexpectedly advantageous properties of the method of the present invention. See MPEP § 716.02(1) II.

In order to provide further support for unexpectedly advantageous properties of the method of the present invention, the Examiner's attention is directed to the Haines Declaration (paragraph 15) which discusses the results of a series of actual comparisons of the thermal performance of walls coated with high infrared reflectance (i.e., "cool") vis-à-vis standard colors. The "cool coatings" of the experimental protocol were products of Textured Coatings of America, Inc. and are the heat reflective wall paints of the claimed invention. The "standard colors" of the experiment described in the Haines Declaration were of the same color but lacked the heat reflective metal oxide pigments comprising a solid solution having a corundum-hematite crystal lattice structure of the present invention. Three test sites were used for this research: Phoenix, Jacksonville, and Oak Ridge. At the Phoenix site, peak temperature differences at noon in cool versus standard coated walls approached 36 °F. At the Jacksonville site, peak temperature differences at noon in cool versus standard coated walls approached 6 °F. At the Oak Ridge site, peak temperature differences at 3 PM in cool versus standard coated walls approached 16 °F. Based on these data, analyses clearly show energy savings of 4 to 9 % for cool (i.e., infrared reflective) paints compared to standard colors. It is submitted that these actual

energy savings calculations demonstrate evidence of unexpectedly advantageous properties of the method of the present invention. See MPEP § 716.02(1) II.

Accordingly, even if the Sliwinski and Krauthauser reference are improperly combined, the references still fail to provide a reasonable expectation of successfully achieving the instantly claimed invention.

Rejection of Claims 1-17 and 20-23 under 35 U.S.C. §103(a) over Sliwinski in view of Yanagimoto

The rejection of Claims 1-17 and 20-23 under 35 U.S.C. §103(a) as allegedly being unpatentable over Sliwinski in view of Yanagimoto, is respectfully traversed.

As discussed above, the Examiner acknowledges (Office Action mailed February 7, 2006, page 13, paragraph 26, lines 11-12) that Sliwinski does not explicitly teach applying/coating the paint onto the external vertical wall(s) of a building. In an attempt to fill this claim element missing from Sliwinski, the Examiner relies on Yanagimoto. Similar to the defects in the *prima facie* obviousness rejection over Sliwinski and Krauthauser discussed above, the Examiners' rejection over Sliwinski and Yanagimoto is also fatally defective.

In this regard, the Examiner has failed to point to any specific teachings in either Sliwinski or Yanagimoto that would motivate one of skill in the art to combine the pigments of Sliwinski with the composite coatings of Yanagimoto to arrive at the present invention. Again, this rejection is a classic use of hindsight in which the Examiner has broken the references into minor elements and put them back together using the instant application as a guide to allege that the combination of references meet the claim elements.

Furthermore, there is no enabling teaching in either the Sliwinski or Yanagimoto references that would give an ordinary skilled artisan any reasonable expectation that merely painting external walls of a building with paint having the claimed pigments could reduce energy

costs as compared to a building with a building painted in the same color lacking the claimed pigments.

As described at paragraph 17 of the Gierke Declaration, the composite pigment of Yanagimoto contains a white pigment (i.e., nucleus) coated with a near-infrared non-absorbing colorant, and the required white pigment nucleus is responsible for the majority of the reflection of the infrared radiation. It is further understood that particularly preferred pigments surrounding the white pigment nucleus transmit near-infrared radiation (Yanagimoto, Col. 3, lines 31-32). Again, in contrast, the present claims require reflective pigments (see Gierke Declaration, paragraph 12) Thus, Yanagimoto is irrelevant to the present claims which provide heat reflective wall paint comprising at least one heat reflective metal oxide pigment comprising a solid solution having a corundum-hematite crystal lattice structure. It is submitted that there would be no motivation by one of ordinary skill in the art to combine Sliwinski with Yanagimoto because the paint compositions thereof operate by different principles (see Gierke Declaration, paragraphs 18). Accordingly, Applicant requests reconsideration and withdrawal of the current rejection.

As described above, the Examiner has failed to make any showing that prior to the Applicants' invention there would be any reasonable expectation that simply coating the exterior walls of a building with a paint that heat reflective metal oxide pigment comprising a solid solution having a corundum-hematite crystal lattice structure could successfully reduce energy consumption associated with cooling the interior of the building. The Yanagimoto reference does not provide any teaching that would provide such a reasonable expectation to one of ordinary skill. Accordingly, even if the Sliwinski and Yanagimoto reference are improperly combined, the references still fail to provide a reasonable expectation of successfully achieving the instantly claimed invention.

Rejection under 35 U.S.C. §103(a): Claims 18-19 and Claims 31-35

The rejections under 35 U.S.C. §103(a) of Claims 18-19 as allegedly being unpatentable over Sliwinski in view of “There Goes the Sun,” Krauthauser, or Yanagimoto, further in view of Tsuda or Slama, of Claim 30 and 34 over Sliwinski in view of “There Goes the Sun,” Krauthauser, or Yanagimoto, further in view of Krauthauser and Dainippon (JP 63-33406), of Claim 31-32 over Sliwinski in view of “There Goes the Sun,” Krauthauser, or Yanagimoto, further in view of Krauthauser and Dainippon (UP 63-33406), further in view of Abe or Gilli, of Claim 33 over Sliwinski in view of “There Goes the Sun,” Krauthauser, or Yanagimoto, further in view of Krauthauser and Dainippon (UP 63-33406), of Claim 35 over Sliwinski in view of “There Goes the Sun,” Krauthauser, or Yanagimoto, further in view of Krauthauser and Dainippon (UP 63-33406), and of Claims 34-35 over Sliwinski in view of “There Goes the Sun,” Krauthauser, or Yanagimoto, further in view of Krauthauser and Dainippon (UP 63-33406), further in view of SUPER COTE TEXTURED PRIMER technical data sheet, are respectfully traversed.

For the reason given above, “There Goes the Sun” is not available as a reference under 35 U.S.C. §103(a), and Sliwinski in view of Krauthauser or Yanagimoto fails to render obvious Claims 1 and 2 and Claims 18-19 and 31-35 which depend therefrom. Furthermore, Tsuda, Slama, Dainippon, Abe, Gilli, or the aforementioned technical data sheet cannot cure these deficiencies for reasons of record; i.e., the Office Action mailed February 7, 2006, describes the subject matter of Tsuda, Slama, Dainippon, Abe, Gilli, and the aforementioned technical data sheet, none of which cure the deficiencies of Sliwinski in view of Krauthauser or Yanagimoto. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the current rejection.


Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. In the event that any matters remain to be resolved in view of this communication, the Examiner is encouraged to call the undersigned so that a prompt disposition of this application can be achieved.

No fee is believe due with the present communication. However, the Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-0872. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-0872. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-0872.

Respectfully submitted,

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By  _____

Richard J. Warburg
Attorney for Applicant
Registration No. 32,327

FOLEY & LARDNER LLP
Customer Number: 30542
Telephone: (858) 847-6767
Facsimile: (858) 792-6773

- Exhibit 1: Declaration of Mark A. Gierke under 37 C.F.R. § 1.132
- Exhibit 2: Declaration of Jay A. Haines under 37 C.F.R. §§ 1.131-1.132

Exhibit 1: Declaration of Mark A. Gierke under 37 C.F.R. § 1.132